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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,011	04/07/2006	Graeme Moad	PP/15-22778/CGM 522/A/PCT	1662

324 7590 02/19/2009

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EXAMINER	
LEE, RIP A	

ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
02/19/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/533,011	MOAD ET AL.	
	Examiner	Art Unit	
	RIP A. LEE	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,8-18 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 4, 8-18 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11-21-2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action follows a request for continued examination (RCE) under 37 § C.F.R. 1.114, filed on November 21, 2008. Claims 1, 3, 4, 8-18 and 20 are pending.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, 3, 4, 8-14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenthal *et al.* (U.S. 6,864,308).

Rosenthal *et al.* teaches a process of melt blending a mixture of polyolefin, a smectite clay, and an intercalating agent such as sorbitan monostearate or sorbitan tristearate (col. 2, lines 57-67, examples 2-4, claims). Stabilizer is also added to the mixture during melt blending (table 1). Smectite clays include montmorillonite, beidellite, hectorite, saponite, sauconite, stevensite, and volkonskoite (col. 2, lines 27-30), and the smectite clay can be untreated (col. 2, line 32). While the disclosure lacks examples showing use of untreated clay, the person of ordinary skill in the art would have found it obvious to utilize unmodified clay since this aspect of the invention is clearly disclosed in the text and in view of the fact that modulus enhancement of the untreated clay with EBS is the same as the modulus enhancement of the organoclay with EBS on an ash content compensated basis, despite poorer dispersion of untreated clay (col. 9, lines 57-62). The polyolefin is polyethylene, propylene, and copolymers thereof (col. 2, lines 17-25). The ratio of intercalating agent to smectite clay is at least 1:3 (col. 3, line 5), and working examples disclose compositions containing 3 wt % of filler and 1 wt % of intercalating agent; note that ratio lies squarely within the range of 1/10 to 1/2 set forth in the instant claims. Temperature of melt mixing depends on the melting temperature of the polyolefin; examples show a representative polypropylene composite melt mixed at a barrel temperature of 190 °C (col. 4, line 27), and comparable polyolefins will have melt

temperature well within the claimed range of 120-290 °C. Conventional additives such as hindered amine light stabilizer are included (col. 4, line 45). Molded articles prepared from inventive compositions are disclosed in column 3, lines 45-50; compositions are especially useful for fabrication of extruded film (col. 4, line 1).

Claims 16 and 18 are product-by-process claims. It is well settled that where product by process claims are rejected over a prior art product that appears to be the same, the burden is shifted to the Applicant to establish an unobviousness difference, even if the production processes are different. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Furthermore, the patentability of a product claim rests on the product formed, not on the method by which it was produced. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

3. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenthal *et al.* in view of Mehta *et al.* (U.S. 6,844,389).

Rosenthal *et al.* is silent with respect to compounding from a concentrate or masterbatch. However, at the time the invention was made, use of concentrates, or masterbatches, was known to those having skill in the extrusion art. For instance, Mehta *et al.* discloses preparing polyolefin-clay nanocomposites in which the clay filler is let down into the polymer matrix by use of a concentrate. As appreciated in the art, use of concentrates allows for more effective incorporation of compounding ingredients into a polymer matrix, and it minimizes the number of materials that must be stored and handled by processors. Typical concentrates contain 20-60 wt % of clay and other processing additives (col. 7, line 61 - col. 8, line 26). The disclosure of Mehta *et al.* would have suggested to one having skill in the art that compositions of Rosenthal et al. may be prepared more conveniently using the masterbatch technique, and therefore, it would have been obvious to one having ordinary skill in the art to make compositions of Rosenthal *et al.* via a masterbatch, as prescribed in Mehta *et al.* Since this is process is well-established in the art, one having ordinary skill in the art would have expected such a combination to work with a reasonable expectation of success.

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenthal *et al.* in view of Sun (U.S. 5,912,292).

Rosenthal *et al.* does not disclose use of nucleating agent for making extruded film. However, at the time the instant invention was made, this practice was well-established in the art. Sun teaches benefits of using nucleating agent for preparation of polyolefin film. Nucleating agent allows the polymer to crystallize at a higher temperature during processing (col. 1, lines 58-60). This leads to rapid formation of product due to shorter cycling time for making extruded articles. Moreover, nucleating agent is used to improve clarity and reduce shrinkage of polypropylene film (col. 2, line 7 and 33). The nucleating agent of choice is sodium benzoate, and it may be present in amounts up to 1000 ppm (0.1 wt %); see claim 1. The combination of references would have suggested to one of ordinary skill in the art that properties of film prepared with composition of Rosenthal *et al.* would be improved by incorporation of nucleating agent, as taught in Sun. Therefore, it would have been obvious to one having ordinary skill in the art to use nucleating agent in the composition of Rosenthal *et al.* in order to make of film with reduced shrinkage and high clarity. Since this practice is taught in Sun, one of ordinary skill in the art would have expected the combination of teachings to work with a high degree of success.

5. Claims 1, 3, 8-14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kotani *et al.* (U.S. 5,851,682) in view of evidence found in Sekiyama *et al.* (U.S. 6,150,450).

Kotani *et al.* teaches polyolefin compositions prepared by melt mixing in a Banbury mixer, a single screw extruder, or a twin screw extruder (col. 11, lines 15-18). Compositions contain as filler a compound of formula $[LiAl_2(OH)_6]_2CO_3$ which is commercially available as Mizukalac (col. 13, line 19). Sekiyama *et al.* shows that these aluminum hydroxycarbonates exist as plate-like crystals (col. 28, line 27); that is, compounds are layered. Resin may also contain sorbitan fatty acid ester surfactant, such as sorbitan monosterate and sorbitan monopalmitate, as anti-fogging agent (col. 10, lines 58-60). Table 1 shows representative films of LDPE containing 8 pw of

$[LiAl_2(OH)_6]_2CO_3$ filler. Although these examples do not contain the sorbitan ester component, one of ordinary skill in the art would have found it obvious to include anti-fogging agent since the inventors instruct addition of anti-fogging agent to inventive films. One of ordinary skill in the art would have found it obvious to use anti-fogging agent in an amount of 1.4 to 2.0 pw, as shown in example 10 because this practical amount is demonstrated to be adequate in achieving optimal anti-fogging properties, and one of ordinary skill in the art would have expected use of this quantity of all anti-fogging agents disclosed in the reference to work with a high degree of success. The ratio of sorbitan ester to filler is 1.4/8 = 0.175 or 2/8 = 0.25, and these values lie squarely within the 1/10 to 1/2 range recited in the instant claims. One of ordinary skill in the art would have found it obvious to use a melt mixing temperature suitable for melt mixing the polyolefin such as 130 °C (col. 10, line 67). Other additives such as UV absorbers, light stabilizers, pigment, antioxidants may be included in amounts not to exceed 5pw (col. 10, lines 42-57).

Claims 16 and 18 are product-by-process claims. It is well settled that where product by process claims are rejected over a prior art product that appears to be the same, the burden is shifted to the Applicant to establish an unobviousness difference, even if the production processes are different. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Furthermore, the patentability of a product claim rests on the product formed, not on the method by which it was produced. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kotani *et al*. (U.S. 5,851,682) in view of Mehta *et al*.

Kotani *et al*. teaches that resin compositions may be prepared from a masterbatch (col. 11, line 20), however, the reference is silent with respect the method to carry out such an embodiment. At the time the invention was made, use of concentrates, or masterbatches, was known to those having skill in the extrusion art. For instance, Mehta *et al*. discloses preparing polyolefin-clay nanocomposites in which the clay filler is let down into the polymer matrix by use of a concentrate. As appreciated in the art, use of

concentrates allows for more effective incorporation of compounding ingredients into a polymer matrix, and it minimizes the number of materials that must be stored and handled by processors. Typical concentrates contain 20-60 wt % of clay and other processing additives (col. 7, line 61 - col. 8, line 26). The disclosure of Mehta *et al.* would have suggested to one having skill in the art that compositions of Kotani *et al.* may be prepared more conveniently using the masterbatch technique, and therefore, it would have been obvious to one having ordinary skill in the art to make compositions of Kotani *et al.* via a masterbatch, as prescribed in Mehta *et al.* Since this is process is well-established in the art, one having ordinary skill in the art would have expected such a combination to work with a reasonable expectation of success.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kotani *et al.* in view of Sun.

Kotani *et al.* does not disclose use of nucleating agent for making extruded film. However, at the time the instant invention was made, this practice was well-established in the art. Sun teaches benefits of using nucleating agent for preparation of polyolefin film. Nucleating agent allows the polymer to crystallize at a higher temperature during processing (col. 1, lines 58-60). This leads to rapid formation of product due to shorter cycling time for making extruded articles. Moreover, nucleating agent is used to improve clarity and reduce shrinkage of polypropylene film (col. 2, line 7 and 33). The nucleating agent of choice is sodium benzoate, and it may be present in amounts up to 1000 ppm (0.1 wt %); see claim 1. The combination of references would have suggested to one of ordinary skill in the art that properties of film prepared with composition of Kotani *et al.* would be improved by incorporation of nucleating agent, as taught in Sun. Therefore, it would have been obvious to one having ordinary skill in the art to use nucleating agent in the composition of Kotani *et al.* in order to make of film with reduced shrinkage and high clarity. Since this practice is taught in Sun, one of ordinary skill in the art would have expected the combination of teachings to work with a high degree of success.

8. Claims 1, 4, 8-11, 13, 14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panek *et al.* (U.S. 2004/0110881; provisional date September 27, 2002).

Panek *et al.* teaches a polyolefin composition comprising a non-ionic surfactant selected from ethoxylated sorbitan fatty acid esters (claims 1-3, paragraphs [0021] and [0022]). Ethoxylated sorbitan esters may be contained in mineral oil diluent such that the total amount of ethoxylated sorbitan ester/diluent in the composition lies in the range of 2-8 wt % (paragraph [0028], claims 7, 10, and 12). Compositions include a layered silicate filler such as mica (example MB). The example shows a polypropylene composition comprising 10 wt % of mica and 10 wt % of ethoxylated sorbitan ester/mineral oil (9/1 ratio), but it would have been obvious to the person of ordinary skill in the art to use the recommended quantity of 2-8 wt % of this ethoxylated sorbitan ester/mineral oil mixture since this is what is taught in the prior art. The composition containing 2 wt % of said mixture has an ethoxylated sorbitan ester/mica ratio of about 0.2, and this ratio lies directly within the range set forth in the instant claims. Polyolefin compositions further comprise one or more additives such as antioxidant, UV stabilizer, and pigment (paragraph [0030]). Inventive compositions are prepared by melt mixing in an extruder, followed by palletizing and injection molding (Figure 1, paragraph [0049]).

Claims 16 and 18 are product-by-process claims. It is well settled that where product by process claims are rejected over a prior art product that appears to be the same, the burden is shifted to the Applicant to establish an unobviousness difference, even if the production processes are different. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Furthermore, the patentability of a product claim rests on the product formed, not on the method by which it was produced. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Panek *et al.* in view of Rosenthal *et al.*

Panek *et al.* does not disclose a specific melt mixing temperature. One of ordinary skill in the art would have found it obvious to use a melt mixing temperature suitable for melt mixing the polyolefin. For instance, Rosenthal *et al.* discloses melt mixing of polypropylene compositions at a temperature of 190 °C (col. 4, line 27). The person of ordinary skill in the art would have found it obvious to melt polypropylene compositions of Panek *et al.* at similar temperature.

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Panek *et al.* in view of Mehta *et al.*

Panek *et al.* teaches that resin compositions may be prepared from a masterbatch (col. 11, line 20), however, the reference is silent with respect the method to carry out such an embodiment. At the time the invention was made, use of concentrates, or masterbatches, was known to those having skill in the extrusion art. For instance, Mehta *et al.* discloses preparing polyolefin-clay nanocomposites in which the clay filler is let down into the polymer matrix by use of a concentrate. As appreciated in the art, use of concentrates allows for more effective incorporation of compounding ingredients into a polymer matrix, and it minimizes the number of materials that must be stored and handled by processors. Typical concentrates contain 20-60 wt % of clay and other processing additives (col. 7, line 61 - col. 8, line 26). The disclosure of Mehta *et al.* would have suggested to one having skill in the art that compositions of Panek *et al.* may be prepared more conveniently using the masterbatch technique, and therefore, it would have been obvious to one having ordinary skill in the art to make compositions of Panek *et al.* via a masterbatch, as prescribed in Mehta *et al.* Since this is process is well-established in the art, one having ordinary skill in the art would have expected such a combination to work with a reasonable expectation of success.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paenk *et al.* in view of Sun.

Panek *et al.* does not disclose use of nucleating agent for making compositions. However, at the time the instant invention was made, this practice was well-established in the art. Sun teaches benefits of using nucleating agent for preparation of polyolefin products. Nucleating agent allows the polymer to crystallize at a higher temperature during processing (col. 1, lines 58-60). This leads to rapid formation of product due to shorter cycling time for making extruded articles. The nucleating agent of choice is sodium benzoate, and it may be present in amounts up to 1000 ppm (0.1 wt %); see claim 1. The combination of references would have suggested to one of ordinary skill in the art that cycling time for making molded articles of Panek *et al.* would be improved by incorporation of nucleating agent, as taught in Sun. Therefore, it would have been obvious to one having ordinary skill in the art to use nucleating agent in the composition of Kotani *et al.*, and since this practice is taught in Sun, one of ordinary skill in the art would have expected the combination of teachings to work with a high degree of success.

Response to Arguments

12. The rejection of claims under 35 U.S.C. 112, first paragraph, set forth in paragraph 1 of the final office action dated August 13, 2008 has been withdrawn. Applicant has shown relevant portions of the specification that reasonably conveys to the person of ordinary skill in the art that the inventors, at the time the application was filed, had possession of the claimed invention, namely a polyolefin nanocomposite comprising filler where said filler is not an organically modified clay.

Applicant traverses the rejection of claims over Rosenthal *et al.* (U.S. 6,864,308). Applicant argues that Rosenthal generically mentions untreated clay, pointing out that working examples employ modified organoclay. Applicant also points to example 6, which shows that nanocomposites obtained with unmodified clay have poorer dispersion, as evidence that the reference as a whole would teach away from the present invention. In response, it is well-established that a reference must be considered in its entirety, and it

is well settled that the disclosure of a reference is not limited to preferred embodiments or specific working examples therein. *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 570 (CCPA 1982); *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976). Rather, a reference is relevant for all that it contains, including non-preferred embodiments because a non-preferred portion of a reference disclosure is just as significant as the preferred portion in assessing the patentability of claims. *In re Heck*, 669 F.2d 1331, 1333, 216 USPQ 1038, 1039 (Fed. Cir. 1983); *In re Nehrenberg*, 280 F.2d 161, 126 USPQ 383 (CCPA 1960). With regard to example 6, the cited passage does not present the entire scenario. Inventors note that the modulus enhancement of the untreated clay with EBS is the same as the modulus enhancement of the organoclay with EBS on an ash content compensated basis, despite poorer dispersion of untreated clay (col. 9, lines 57-62). Since there is no gain in modulus enhancement, the reference would not appear to teach away from use of untreated clay.

Applicant submits that a further difference of the claimed invention over Rosenthal lies in the required ratio of intercalating agent to clay. Applicant suggests that use of a 3/2 ratio in example 6 containing unmodified clay would dissuade the skilled artisan to use a 1/3 ratio shown in the general specification. This line of reasoning is not found persuasive for the person of ordinary skill in the art would have understood that the 1/3 ratio would apply to all clays, whether modified or not. Note that example 1 clearly shows a composition in which the intercalant/filler ratio is 1/3. Thus, the skilled artisan would have found it just as obvious to use a 1/3 ratio in untreated clay samples in addition to the quantity shown in example 6.

In light of these considerations, the rejection has been maintained.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

/Rip A. Lee/
Art Unit 1796

February 13, 2009